

WHAT IS CLAIMED IS:

1. A text sentence comparison method comprising:
converting a first text sentence and a second text sentence
5 into a first R tree and a second R tree, respectively;
calculating a distance between the first R tree and the
second R tree on the basis of a distance between two R trees,
which is defined at least in accordance with a condition of
a mapping between vertexes of the two R trees; and
10 calculating a distance between the first text sentence
and the second text sentence on the basis of the calculated
distance between the first R tree and the second R tree.

2. The text sentence comparison method according to
15 claim 1, wherein in the calculation of the distance between
the first R tree and the second R tree:
a distance between a forest, which the first R tree includes,
and a forest, which the second R tree include;
a distance between a subtree, which the first R tree
20 includes, and a subtree, which the second R tree includes; and
a vertex mapping weight of a mapping from the first R
tree to the second R tree;
are calculated.

25 3. The text sentence comparison method according to

claim 2, wherein:

in the conversion:

words included in the first text sentence is
allotted to vertexes of the first R trees; and

5 words included in the second text sentence is
allotted to vertexes of the second R trees; and

the vertex mapping weight is calculated on the basis of
word substitution weight, word deletion weight, and word
insertion weight.

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4. The text sentence comparison method according to
claim 2, wherein:

in the conversion:

15 word information and case information of the first
text sentence are allotted to vertexes of the first R
trees; and

word information and case information of the second
text sentence is allotted to vertexes of the second R
trees; and

20 the vertex mapping weight is calculated on the basis of
word substitution weight, word deletion weight, word insertion
weight, case substitution weight, case deletion weight, and
case insertion weight.

25 5. The text sentence comparison method according to

claim 1, further comprising:

setting the condition of the mapping between the two R trees.

5 6. The text sentence comparison method according to claim 1, wherein the condition of the mapping between the two R trees includes:

the mapping is a one-to-one mapping;

the mapping preserves parent-child relationship; and

10 the mapping preserves structure.

7. The text sentence comparison method according to claim 1, further comprising:

15 inputting the first text sentence and the second text sentence; and

outputting the calculated distance between the first text sentence and the second text sentence.

20 8. A text sentence comparison method comprising:
converting a first text sentence and a second text sentence into a first RO tree and a second RO tree, respectively;
calculating a distance between the first RO tree and the second RO tree on the basis of a distance between two RO trees, which is defined at least in accordance with a condition of
25 a mapping between vertexes of the two RO trees; and

calculating a distance between the first text sentence and the second text sentence on the basis of the calculated distance between the first RO tree and the second RO tree.

5 9. The text sentence comparison method according to claim 8, wherein in the calculation of the distance between the first RO tree and the second RO tree:

 a distance between a forest, which the first RO tree includes, and a forest, which the second RO tree include;

10 a distance between a subtree, which the first RO tree includes, and a subtree, which the second RO tree includes; and

 a vertex mapping weight of a mapping from the first RO tree to the second RO tree;

15 are calculated.

 10. The text sentence comparison method according to claim 9, wherein:

 in the conversion:

20 words included in the first text sentence is allotted to vertexes of the first RO trees; and

 words included in the second text sentence is allotted to vertexes of the second RO trees; and

 the vertex mapping weight is calculated on the basis of
25 word substitution weight, word deletion weight, and word

insertion weight.

11. The text sentence comparison method according to claim 9, wherein:

5 in the conversion:

word information and case information of the first text sentence are allotted to vertexes of the first RO trees; and

10 word information and case information of the second text sentence is allotted to vertexes of the second RO trees; and

the vertex mapping weight is calculated on the basis of word substitution weight, word deletion weight, word insertion weight, case substitution weight, case deletion weight, and
15 case insertion weight.

12. The text sentence comparison method according to claim 8, further comprising:

20 setting the condition of the mapping between the two RO trees.

13. The text sentence comparison method according to claim 8, wherein the condition of the mapping between the two RO trees includes:

25 the mapping is a one-to-one mapping;

the mapping preserves parent-child relationship; and
the mapping preserves brother relationship;
the mapping preserves structure.

5 14. The text sentence comparison method according to
claim 8, further comprising:

 inputting the first text sentence and the second text
sentence; and

 outputting the calculated distance between the first text
10 sentence and the second text sentence.

 15. A text sentence comparison apparatus comprising:
 an input section for inputting a first text sentence and
a second text sentence;

15 a tree structure conversion section for converting the
first text sentence and the second text sentence into a first
R tree and a second R tree, respectively;

 a distance calculation section for calculating a distance
between the first R tree and the second R tree on the basis
20 of a distance between two R trees, which is defined at least
in accordance with a condition of a mapping between vertexes
of the two R trees; and

 a semantic content comparison section for calculating
a distance between the first text sentence and the second text
25 sentence on the basis of the calculated distance between the

first R tree and the second R tree.

16. The text sentence comparison apparatus according to claim 15, further comprising:

5 a mapping weight calculation section for calculating a vertex mapping weight of mapping from the first R tree to the second R tree, wherein:

the distance calculation section calculates:

a distance between a forest, which the first R tree includes,
10 and a forest, which the second R tree include; and

a distance between a subtree, which the first R tree includes, and a subtree, which the second R tree includes.

17. The text sentence comparison apparatus according to claim 16, wherein:

the tree structure conversion section

allots words included in the first text sentence to vertexes of the first R trees, and

allots words included in the second text sentence to vertexes of the second R trees; and

20 the vertex mapping weight calculation section calculates the vertex mapping weight on the basis of word substitution weight, word deletion weight, and word insertion weight.

25 18. The text sentence comparison apparatus according

to claim 16, wherein:

the tree structure conversion section

allots word information and case information of
the first text sentence to vertexes of the first R trees,

5 and

allots word information and case information of
the second text sentence to vertexes of the second R trees;
and

the vertex mapping weight calculation section calculates
10 the vertex mapping weight on the basis of word substitution
weight, word deletion weight, word insertion weight, case
substitution weight, case deletion weight, and case insertion
weight.

15 19. The text sentence comparison apparatus according
to claim 15, further comprising:

a setting input section for allowing a user to set the
condition of the mapping between the two R trees.

20 20. The text sentence comparison apparatus according
to claim 15, wherein the condition of the mapping between the
two R trees includes:

the mapping is a one-to-one mapping;

the mapping preserves parent-child relationship; and

25 the mapping preserves structure.

21. The text sentence comparison apparatus according to claim 15, further comprising:

an output section for outputting the calculated distance
5 between the first text sentence and the second text sentence.

22. A text sentence comparison apparatus comprising:

an input section for inputting a first text sentence and
a second text sentence;

10 a tree structure conversion section for converting the
first text sentence and the second text sentence into a first
RO tree and a second RO tree, respectively;

a distance calculation section for calculating a distance
between the first RO tree and the second RO tree on the basis
15 of a distance between two RO trees, which is defined at least
in accordance with a condition of a mapping between vertexes
of the two RO trees; and

a semantic content comparison section for calculating
a distance between the first text sentence and the second text
20 sentence on the basis of the calculated distance between the
first RO tree and the second RO tree.

23. The text sentence comparison apparatus according to claim 22, further comprising:

25 a mapping weight calculation section for calculating a

vertex mapping weight of a mapping from the first RO tree to the second RO tree, wherein:

the distance calculation section calculates:

5 a distance between a forest, which the first RO tree includes, and a forest, which the second RO tree include; and

a distance between a subtree, which the first RO tree includes, and a subtree, which the second RO tree includes.

24. The text sentence comparison apparatus according
10 to claim 23, wherein:

the tree structure conversion section

allots words included in the first text sentence to vertexes of the first RO trees, and

15 allots words included in the second text sentence to vertexes of the second RO trees; and

the vertex mapping weight calculation section calculates the vertex mapping weight on the basis of word substitution weight, word deletion weight, and word insertion weight.

20 25. The text sentence comparison apparatus according to claim 23, wherein:

the tree structure conversion section

allots word information and case information of the first text sentence to vertexes of the first RO trees,
25 and

allots word information and case information of
the second text sentence to vertexes of the second RO
trees; and

the vertex mapping weight calculation section for
5 calculating the vertex mapping weight on the basis of word
substitutionweight, worddeletionweight, wordinsertionweight,
case substitution weight, case deletion weight, and case
insertion weight.

10 26. The text sentence comparison apparatus according
to claim 22, further comprising:

a setting input section for allowing a user to set the
condition of the mapping between the two RO trees.

15 27. The text sentence comparison apparatus according
to claim 22, wherein the condition of the mapping between the
two RO trees includes:

the mapping is a one-to-one mapping;

the mapping preserves parent-child relationship; and

20 the mapping preserves brother relationship;

the mapping preserves structure.

28. The text sentence comparison apparatus according
to claim 22, further comprising:

25 an output section for outputting the calculated distance

between the first text sentence and the second text sentence.